

## **APPENDIX G-5.**

### **Analysis of Smile, Speech, and Tremor**

#### **Model 1: Enlisted Flyers and Enlisted Groundcrew Combined**

The statistical power to detect a relative risk (Ranch Hands versus Comparisons) significantly different from 1.0 is limited in some analyses in Chapter 11, Neurological Assessment, due to the relatively small number of abnormalities. In particular, the number of abnormalities in the enlisted flyer stratum for Model 1 analyses is small. Consequently, auxiliary analyses with the enlisted flyer and enlisted groundcrew strata combined are presented for smile (Table 13-13), speech (Table 13-17), and tremor (Table 13-30). The p-values for the Model 1 analyses of these three variables were not significant ( $p > 0.10$ ) for the enlisted flyer and enlisted groundcrew strata when analyzed separately, but marginally significant ( $0.05 \leq p < 0.10$ ) when the two strata were combined. These auxiliary analyses are found in Table G-5-1 (smile), Table G-5-2 (speech), and Table G-5-3 (tremor).

**Table G-5-1.**  
**Analysis of Smile**  
**Enlisted Flyers and Enlisted Groundcrew Combined**

a) MODEL 1: RANCH HANDS VS. COMPARISONS — UNADJUSTED					
Occupational Category	Group	n	Percent Abnormal	Est. Relative Risk (95% C.I.)	p-Value
<i>All</i>	<i>Ranch Hand</i>	948	0.9	1.52 (0.59,3.97)	0.533
	<i>Comparison</i>	1,280	0.6		
Officer	Ranch Hand	367	0.8	0.58 (0.15,2.26)	0.639
	Comparison	501	1.4		
Enlisted Flyer and Enlisted Groundcrew	Ranch Hand	581	1.0	8.12 (0.98,67.62)	0.055
	Comparison	779	0.1		

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED			
Occupational Category	Adj. Relative Risk (95% C.I.)	p-Value	Covariate Remarks <sup>a</sup>
<i>All</i>	1.53 (0.59,3.99)	0.383	OCC (p=0.096)
Officer	0.58 (0.15,2.26)	0.639	
Enlisted Flyer and Enlisted Groundcrew	8.12 (0.98,67.62)	0.055	

<sup>a</sup> Covariates and associated p-values correspond to final model based on all participants with available data.

**Table G-5-2.**  
**Analysis of Speech**  
**Enlisted Flyers and Enlisted Groundcrew Combined**

<b>a) MODEL 1: RANCH HANDS VS. COMPARISONS — UNADJUSTED</b>					
<b>Occupational Category</b>	<b>Group</b>	<b>n</b>	<b>Percent Abnormal</b>	<b>Est. Relative Risk (95% C.I.)</b>	<b>p-Value</b>
<i>All</i>	<i>Ranch Hand</i>	<i>948</i>	<i>0.6</i>	<i>4.07 (0.82,20.21)</i>	<i>0.133</i>
	<i>Comparison</i>	<i>1,280</i>	<i>0.2</i>		
Officer	Ranch Hand	367	0.3	1.37 (0.09,21.91)	0.999
	Comparison	501	0.2		
Enlisted Flyer and Enlisted Groundcrew	Ranch Hand	581	0.9	6.75 (0.79,57.96)	0.109
	Comparison	779	0.1		

<b>b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED</b>			
<b>Occupational Category</b>	<b>Adj. Relative Risk (95% C.I.)</b>	<b>p-Value</b>	<b>Covariate Remarks<sup>a</sup></b>
<i>All</i>	<i>3.98 (0.80,19.91)</i>	<i>0.068</i>	AGE (p=0.001) OCC (p=0.108)
Officer	1.40 (0.09,22.61)	0.813	
Enlisted Flyer and Enlisted Groundcrew	6.55 (0.74,57.62)	0.090	

<sup>a</sup> Covariates and associated p-values correspond to final model based on all participants with available data.

**Table G-5-3.**  
**Analysis of Tremor**  
**Enlisted Flyers and Enlisted Groundcrew Combined**

<b>a) MODEL 1: RANCH HANDS VS. COMPARISONS — UNADJUSTED</b>					
<b>Occupational Category</b>	<b>Group</b>	<b>n</b>	<b>Percent Abnormal</b>	<b>Est. Relative Risk (95% C.I.)</b>	<b>p-Value</b>
<i>All</i>	<i>Ranch Hand</i>	<i>948</i>	<i>3.0</i>	<i>1.12 (0.67,1.85)</i>	<i>0.771</i>
	<i>Comparison</i>	<i>1,280</i>	<i>2.7</i>		
Officer	Ranch Hand	367	2.2	0.54 (0.23,1.23)	0.194
	Comparison	501	4.0		
Enlisted Flyer and Enlisted Groundcrew	Ranch Hand	581	3.4	1.95 (0.98,3.89)	0.081
	Comparison	779	1.8		

<b>b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED</b>			
<b>Occupational Category</b>	<b>Adj. Relative Risk (95% C.I.)</b>	<b>p-Value</b>	<b>Covariate Remarks<sup>a</sup></b>
<i>All</i>	<i>1.09 (0.65,1.83)**</i>	<i>0.755**</i>	GROUP*OCC (p=0.029) AGE*DRKYR (p=0.038)
Officer	0.55 (0.24,1.28)	0.166	
Enlisted Flyer and Enlisted Groundcrew	1.83 (0.90,3.69)	0.094	

<sup>a</sup> Covariates and associated p-values correspond to final model based on all participants with available data.

\*\* Group-by-covariate interaction ( $0.01 < p \leq 0.05$ ); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.